

**REMARKS**

Claims 1, 2 and 4-14 remain pending after this response. Claims 5 and 9-14 are withdrawn from consideration. Thus, claims 1, 2, 4 and 6-8 are under examination.

**Withdrawal of Final Rejection**

Applicants thank the Examiner for the issuance of a new non-final Official Action on October 20, 2004 to replace the Final Official Action of July 15, 2004.

**Amendments to Claims**

Claim 1 is amended to change the scope of the definition of m (the number of ligands) from "1 to 6" to "2 to 6". The word "blankets" is also changed to "brackets" in claim 1. No new matter is added by this amendment.

**Interview with Examiner**

Applicants thank the Examiner for the courtesy extended toward their representative during the interview of October 6, 2004. The outstanding rejection under 35 USC 103(a) was discussed, with the Examiner suggesting that the scope of the claims be narrowed to more clearly distinguish over the cited prior art. No agreement was reached during the interview as to

either the withdrawal of the rejection or the amendment of the claims.

**Allowable Subject Matter**

Applicants thank the Examiner for the indication of allowability of claims 6-8. However, for the reasons presented in detail below, all pending claims are believed to be directed to allowable subject matter.

**Rejection under 35 USC §103**

Claims 1, 2, and 4 stand rejected under 35 USC §103(a) as being unpatentable over Bansleben '664 (US Patent No. 6,410,664) and Bansleben '715 (US Patent No. 6,197,715). This rejection respectfully is traversed.

Applicants previously submitted a Declaration under 37 CFR §1.132 by Dr. Shigekazu Matsui, one of the inventors of the instant invention, wherein he tested the catalyst of Bansleben '664 and Bansleben '715. The described polymerization tests used the same protocol as applicants' Example 1, with the exception that the nickel catalyst of the cited references was used instead of the titanium complex (1) of the present invention. As is noted at page 3 of the Declaration, polymerization of the desired polymer was not obtained when the

nickel catalyst of the cited prior art was employed as the polymerization catalyst.

The claimed invention is accordingly neither taught nor suggested by the cited references. The claimed invention possesses unexpectedly superior results relative to either of Bansleben '664 or Bansleben '715, as confirmed by the Declaration.

The catalysts of the present invention containing transition metals of Groups 4 to 6 and 11 yield excellent polymerization activity whereas Ni-based catalysts are ineffective polymerization catalysts.

The Examiner finds the Declaration of Dr. Matsui to be unpersuasive, stating in the Official Action:

"In the declaration, applicants have shown when bis(N-salicylidenecyclohexylaminato)nickel(II) as the transition metal compound is used to replace the titanium compound in applicants' Example 1, no polymer is produced. However, such a showing is deficient. The instant claims are not limited to the polymerization conditions of applicants' Example 1. On the contrary, the polymerization process condition of the instant claim is so broad, it actually includes the polymerization condition of Bansleben such as those disclosed on col. 30, lines 24-53 as cited in previous Office Action. Therefore, the showing is not commensurate with the scope of the instant claims.

In order to overcome the rejection of record, applicants need to show either that under Bansleben's polymerization condition, when the Ni complex is replaced with applicants' catalyst, the copolymerization will perform in a superior way or that Bansleben's polymerization process does not meet the  $\Delta E$  limitation of the instant claims."

Applicants disagree with the position of the Examiner. Applicants assert that the Declaration is sufficient to demonstrate that the cited Bansleben '664 and Bansleben '715 references do not render obvious the claimed invention.

The Examiner previously relied on the inherent properties of the Ni(II) salicylaldimine catalyst (col. 30, lines 24-53 and Table 8) of the cited references to render obvious the instant invention (see Official Action of September 12, 2003). In this regard, the Examiner stated:

"US 6,410,664 teaches copolymerization of ethylene and functionalized cyclic olefins in the presence of a Nickel (II) salicylaldimine catalyst (col. 30, lines 24-53 and Table 8).

US 6,410,664 does not expressly teach the coordination energies between the catalyst and ethylene or methyl acrylate. Based on the fact that the copolymerization ethylene and functionalized cyclic olefin can be readily performed a skilled artisan would have expected the catalyst of US 6,410,664 to inherently have a  $\Delta E$  which satisfies the  $\Delta E$  limitation of the instant claims because the  $\Delta E$  limitation of the instant claims is to guarantee the copolymerization between the non-polar olefin and polar olefin to readily occur."

The Examiner also takes the position that one of ordinary skill in the art would expect the "catalyst of US 6,410,664 to inherently have a  $\Delta E$  which satisfies the  $\Delta E$  limitation of the instant claims". However, the Declaration demonstrates that the Ni catalyst does not inherently possess this characteristic.

If, *arguendo*, the Ni catalyst did possess this characteristic, the catalyst of Bansleben '664 or Bansleben '715 could successfully be employed to yield the polar olefin of applicants' invention. However, as the Ni catalyst could not be successfully used as claimed, the disclosures of Bansleben '664 and Bansleben '715 cannot render *prima facie* obvious the instant invention.

Moreover, applicants submit that it is well accepted that comparative tests can be done that test a compound closer to the claimed invention than the closest compound disclosed in the prior art. (See *Ex parte Humber*, 217 USPQ 265 (POBA 1981)). Thus, it is acceptable for applicants to test a process that is closer to the instant invention than the prior art process. Applicants have in fact tested a process closer to the claimed process than disclosed in Bansleben '664 or Bansleben '715 - i.e., the claimed process using the catalyst of Bansleben '664 and/or Bansleben '715.

Moreover, applicants submit herewith a Conner et al literature publication (*Chem. Comm.*, 2003, pp. 2272-2273) that confirms that a nickel complex with two bidentate ligands (bis-ligated complex) is not an active catalyst for ethylene polymerization. The Examiner's attention is directed to page 2272, right hand column, lines 10-14 of Connor et al, which recites:

"Bis-ligation of chelating ligands has been noted in a similar system, and as is the case with 8, the bis-ligated complex was not an active catalyst for ethylene polymerization."

It should accordingly be clear to one of ordinary skill in the art that the nickel complex simply does not work for ethylene polymerization, and in particular, a nickel complex having two ligands.

Further, the complex (compound 10) rapidly decomposes when exposed to air due to its instability. The reference states at page 2273, left hand column, lines 39-42 in this regard:

"In addition, while compounds 8 and 9 are air- and moisture-stable, 10 rapidly decomposes when exposed to air. The instability of 10 illustrates that mono-ligation is preferred when the ligand is sufficiently bulky."

Applicants also note that one of the authors of the Connor et al publication is Robert H. Grubbs, who is also one of the inventors of the Bansleben '664 and Bansleben '715 patents.

Applicants also respectfully point out that only a complex with a ligand to metal ratio of 1:1 is taught by the Bansleben '664 and Bansleben '715 references. The Examiner's attention is directed to column 4, line 18 of the '664 patent, and column 7, line 32 of the '715 patent, where n (the number of ligands) is stated to be 0 or 1.

By contrast, applicants' amended claim 1 provides for the presence of from 2 to 6 ligands, an embodiment neither disclosed nor suggested by the cited '664 and '715 references.

The rejection is thus without basis and should be withdrawn.

The application is believed to be in condition for allowance and an early indication of same is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By



Marc S. Weiner, #32,181

MSW/JWH/sh  
1155-0221P

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

Attachment: Conner et al (Chem. Comm., 2003, pp. 2272-2273)